

Preface

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I am delighted to introduce the 2017-18 edition of *Analytics Now*, a publication of Simon Fraser University's Operations Research Student Union (ORSU). *Analytics Now* features selected projects from SFU's *Introduction to Operations Research* (Math 208W) and capstone *Operations Research Clinic* (Math 402W) courses.

The Clinic projects begin with the 2017 paper of Jiang, Lu, Siu, Tong and Yin on *School Infrastructure Planning and Catchment Rezoning: Alleviating Surrey Enrollment Pressure for 2020-2024*, which develops an integer programming model for opening new schools.

Two superb projects followed in 2018. Bi, Dallow and Zimmerman worked in collaboration with a community health care centre in Vancouver to produce a nurse scheduling algorithm. This work, *Optimizing Nurse Schedules at a Community Health Centre*, was enthusiastically received by management at the clinic, and is the foundation of a continuing partnership between the clinic and SFU, with work ongoing. It has been followed up with posters at the SFU Symposium on Mathematics on Computation and the Centre for Health Services and Policy Research (CHSPR) conference.

Meanwhile, the project of Bolkhanian and Reyers introducing *The Walking Schoolbus Routing Problem* won the 2018 Canadian Operational Research Society (CORS) Undergraduate Student Paper Competition, besting teams from the University of Waterloo, Dalhousie and the University of Toronto. This paper considers a problem of organizing "walking school buses" of children going to school, where various leaders (parents) organize to pick up groups of students from their houses on the way to school. This is related to classical vehicle routing problems, but also distinct due to the availability of dynamic leader allocation. Proposed heuristics are evaluated on data from 58 schools in the Greater Vancouver region.

In the introductory course, the 2017 project of Bi and Gusev considers *Optimizing Vancouver's Snow Plow Route System*, while the 2018 projects include Basnayake, Kim, Lee and Lu on the *Exam Scheduling Problem* and Jace, Wong, Xu and Zita on *Surrey LRT Optimal Station Locations*.

I once again thank the members of Simon Fraser University's Operations Research Student Union (ORSU), notably ORSU President Samantha Zimmerman, for their efforts in publishing the nice work of our undergraduate students. And I thank all the authors in this volume for their hard work, and allowing their projects to appear. We look forward to more successful projects in 2019!